

On a method of estimating, ...

S/140/62/000/006/003/006
E031/E435

equations are established which have power series in μ as solutions, such that their smallest radius of convergence is the lower bound to the radii of convergence of the solution of the original differential equations. A practical method of calculation is described. An example illustrates the steps. Two auxiliary sets of equations are constructed. The first set is solved and the conditions for the second set to have periodic solutions are used to determine the constants of integration in the periodic solutions of the first set. The functional equations are solved to give the radius of convergence. A comparison is made with the results of D.C. Lewis (Rational Mech. and Analysis, v.4, no.5, 1955, 795-815 and Ann. of Math., v.63, no.3, 1956, 535-548) and S.N. Shimanov (PMM, v.21, no.2, 1957, 245-252) which shows that the present method is more precise. There is also a comparison between the results of the author's earlier paper (Izv. VUZ. Matem., no.2(9), 1959, 202-211) and the work of A.Ye. Gel'man (DAN SSSR, v.118, no.6, 1958, 1063-1065) which is likewise favourable to the author.

JB

Card 2/3

On a method of estimating ...

S/140/62/000/006/003/006
E031/E435

ASSOCIATION: Vsesoyuznyy zaochnyy energeticheskiy institut
(All-Union Correspondence Power Engineering Institute)

SUBMITTED: September 30, 1959

JB

Card 3/3

RYABOV, Yu.A.

Some asymptotic properties of linear systems with a small time lag. Trudy Sem. po teor. diff. urav. s otklon. arg.3:153-164 '65.

Approximation of solutions to nonlinear differential equations with time lag. Ibid.:165-185

(MIRA 19:1)

1 46326-86 EWT(1)/T/EWF(1) (JPRG)

ACC NR: AT6014865

SOURCE CODE: UR/3125/65/003/000/0165/0185

25
B+

AUTHOR: Ryabov, Yu. A.

ORG: none

TITLE: On approximation of solutions to nonlinear differential equations with a delayed argument

SOURCE: Moscow. Universitet druzhby narodov. Seminar po teorii differentsial'nykh uravneniy s otklonyayushchimsya argumentom. Trudy, v. 3, 1965, 165-185

TOPIC TAGS: nonlinear differential equation, differential equation solution, functional equation, continuous function

ABSTRACT: This is a continuation of previous work by the same author in which he has treated the application of the Lyapunov-Poincare small-parameter method to equations with a delayed argument, and is an extension of his previous results, with certain restrictions, to nonlinear equations of rather general form. The development begins with the following equation:

$$\dot{x}(t) = f(x(t), x(t-h), t),$$

where $h=h(t)$ is the bounded delay and f a continuous and differentiable function of its arguments $x(t)=x$, $x(t-h)=\bar{x}$. The Lyapunov method of majorizing functional equations is utilized and two numerical examples are given. It is concluded that from the point of view of constructing approximate solutions, nonlinear equations differ

Card 1/2

L 46826-66

ACC NR: AT6014865

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little in a practical sense from linear equations. It is seen from the numerical examples that, as in the case of linear equations, solutions determined by certain initial functions correspond to a high degree of accuracy to the corresponding special solution (after several steps and when the delay is small) over an interval equal to or exceeding the delay interval. Orig. art. has: 65 formulas.

SUB CODE: 12/ SUBM DATE: / ORIG REF: 006/ OTH REF: 001

Card 2/2 blg

L 45392-66 EWT(d)/EWP(1) LJP(c)

ACC NR: AR6016609

SOURCE CODE: UR/0044/65/000/012/BQ49/BQ49

28 B

AUTHOR: Ryabov, Yu. A.

TITLE: Certain asymptotic properties of ¹⁶linear systems with small delay in time

SOURCE: Ref. zh. Matematika, Abs. 12B262

REF SOURCE: Sb. Tr. Seminara po teorii differents. uravn. s otklon. argumentom. T. 3. M., 1965, 153-164

TOPIC TAGS: asymptotic property, linear system

ABSTRACT: It is established that for the equation

$$\dot{x}(t) = p(t)x(t) + q(t)x(t-h(t)) \quad (1)$$

for bounded piecewise-continuous p, q and h , $0 \leq h \leq h_0$, any solution with integrable and bounded initial function, if h_0 does not exceed some limit, and its corresponding "special solution" of this equation asymptotically approach each other as $t \rightarrow +\infty$, and also, that their characteristic exponents coincide. V. Petukhov [Translation of abstract]

SUB CODE: 12

UDC: 517.949.2

Card 1/1 hs

RYABOV, Yu.A.

Evaluating the region of the existence of a periodic Hill's
solution of the problem of the moon's motion. Biul. Inst.
teor. astron. 8 no.10:772-786 '62. (MIRA 17:8)

RYABOV, Yu. A. (Moscow)

"Untersuchung nichtlinearer Schwingungen von Systemen mit geringer Verzögerung."

report submitted for 3rd Conf on Nonlinear Oscillations, E. Berlin, 25-30 May 64.

RYABOV, Yu.A.

Method of the small parameter in the theory of periodic solutions
of differential equations with delayed argument. Trudy Sem. po teor.
diff. urav. s otklon. arg. 1:103-113 '62. (MIRA 16:12)

RYABOV, Yu.A.

Some asymptotic properties of linear systems with a small delay.
Dokl. AN SSSR 151 no.1:52-54 J1 '63. (MIRA 16:9)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
Predstavleno akademikom B.N.Petrovym.
(Differential equations, Linear)

RYABOV, YU.A. (Moscow)

"An analysis of non-linear oscillations of systems with small delay"

Report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow 29 Jan - 5 Feb 64.

137-58-6-11954

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 110 (USSR)

AUTHORS: Ryabov, Yu.F., Okunev, A.I., Kirr, L.D., Oshman, V.A.

TITLE: Distribution of Certain Rare and Disseminated Elements in the Treatment Products of Copper Ores and Concentrates (Raspre-deleniye nekotorykh redkikh i rasseyannykh elementov v produktakh pererabotki mednykh rud i kontsentratov)

PERIODICAL: Byul. tsvetn. metallurgii, 1957, Nr 22, pp 24-27

ABSTRACT: Tables of the distribution of rare and disseminated elements at various stages of conversion at the Karabash and Kras-noural'sk copper smelter are presented. Under conditions of pyrometallurgical treatment, In, Ge, and Tl chiefly go into the slags; Se and Te go into the blister Cu and the dust; and Cd into the dust.

G.S.

1. Copper ores--Processing 2. Rare earth elements--Determination

Card 1/1

137-58-6-11329

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 10 (USSR)

AUTHORS: Okunev, A.I., Kirr, L.D., Oshman, V.A., Ryabov, Yu.F.

TITLE: The Distribution of Rare and Disseminated Elements in the Milling of Ural Copper-and-zinc Ores by Separation of Independent Concentrates (Raspredeleniye redkikh i rasseyannykh elementov pri obogashchenii ural'skikh medno-tsinkovykh rud s vydeleniyem samostoyatel'nykh kontsentratov)

PERIODICAL: Byul. tsvetn. metallurgii, 1957, Nr 23, pp 12-13

ABSTRACT: The Unipromed' Institute has made a study of the distribution of rare and disseminated elements among the various milling products at sections of the Krasnoural'sk and Karabash Ore Milling plants. The results of the analyses show that the Cd, In, and Ge contents of the Zn concentrate exceed many times over the contents thereof in the starting specimen. However, the total extraction thereof in the Zn concentrate is comparatively low, and it is 67-85% in the pyrite concentrate and tailings. The concentration of rare elements in the Cu concentrate is less, owing to the separation of Zn concentrate, than is the case in flotation involving a combined Cu-Zn concentrate.

Card 1/1

1. Copper ores--Processing
2. Zinc ores--Processing
3. Rare earth elements--Availability

A.Sh.

OKUNEV, A.I.; RYABOV, Yu.F.

Behavior of germanium during pyrometallurgical treatment of copper
ores and concentrates. TSvet. met. 31 no. 7:78-84 J1 '58.
(MIRA 11:8)

1. Unipromed'.

(Copper--Metallurgy)
(Germanium)

KVITEK, I.; POPOV, Yu.P.; RYABOV, Yu.V.

Ternary fission of U^{235} on resonance neutrons. IAd. fiz. 2
no.4:677-681 0 '65. (MIRA 18:11)

1. Ob'yedinennyy institut yadernykh issledovaniy.

L 7950-66 EWT(m)/EPF(n)-2/FCC/FCS(f)/EWP(n)/EWA(h) DM

ACCESSION NR: AP5019812

UR/0089/65/019/001/0043/0045
539.17.02:539.173.4

AUTHOR: Wang, Shih-Ti; Wang, Yung-Ch'ang; Dermendzhiyev, Ye.; Ryahov, Yu. V.

TITLE: Cross section for the fission of U^{235} by resonant neutrons

SOURCE: Atomnaya energiya, v. 19, no. 1, 1965, 43-45

TOPIC TAGS: uranium, nuclear fission, fission cross section, fast reaction, fission product, prompt neutron, detection system

ABSTRACT: In view of the discrepancies between results obtained by different workers, the authors used a new experimental procedure based on the time of flight method. The source was the fast pulsed reactor of Ob'yedinennyi institut yadernykh issledovaniy (Joint Institute of Nuclear Research). The flight range was 1000 meters. The time spectrum was registered with a 2048-channel time analyzer with resolution ~ 0.04 μ sec/m. The fissions were registered with the detector shown in Fig. 1 of the enclosure, a description of which is also published elsewhere (Preprint OIYaI no. 1685, 1964), with efficiency 30--50% and with low sensitivity to small variation of the number of prompt neutrons per fission. The background was reduced to 1--2% of the count in the strong resonances of U^{235} . A plot of the fission cross section at neutron energies 2--70 eV and a table of the products of

Card 1/3

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L 7950-66

ACCESSION NR: AP5019812

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the cross sections and the line widths are included. The results are found to agree with published data. "The authors thank F. L. Shapiro, L. B. Pikel'ner, and I. V. Kirpichnikov for valuable advice and discussion, and Yu. I. Kolgin and T. S. Afanas'yeva for help with the measurements and in the data reduction." Orig. art. has: 2 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 28Jul64

ENCL: 01

SUB CODE: NP

NR REF SOV: 004

OTHER: 007

Card 2/3

L 7950-66

ACCESSION NR: AP5019812

ENCLOSURE: 01

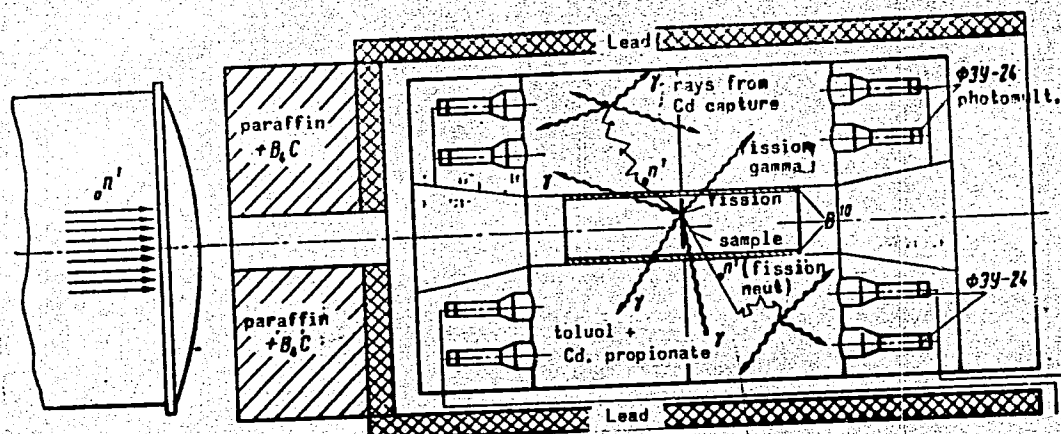


Fig. 1. Longitudinal section through detector and its position in the neutron beam.

Card 3/3

L 2770-66 EWT(m)/T IJP(c)

ACCESSION NR: AP5021332

UR/0120/65/000/004/0063/0070

539.1.074.3:539.173

AUTHOR: Wang, Shih-ti; Ryabov, Yu. V.

TITLE: Liquid scintillator fission and radiative capture detector 19

SOURCE: Priboiy i tekhnika eksperimenta, no. 4, 1965, 63-70

TOPIC TAGS: scintillation counter, scintillator, radiative capture, scintillation detector, capture cross section

ABSTRACT: Various researchers have described the use of large scintillation detectors for the registration of instantaneous fission neutrons containing Cd for the absorption of slowed-down neutrons and their registration by the captured γ -radiation of cadmium. Such counters may be used for the simultaneous measurement of the energy dependence of the fission cross sections and of the radiative capture. The present article describes a 400 liter liquid scintillation detector utilized for fission nuclei parameter measurements at the pulsed fast reactor of the OIYaI. The scintillator contains cadmium propionate and is intended to operate in conjunction with time-of-flight experiments. The article outlines the operating principles and gives detailed characteristics of the detector which detects fissions and radiative captures with a 50% and a 40% efficiency respectively. The detector makes possible work with samples up to several g/cm². "The
Card 1/2

L 2770-66

ACCESSION NR: AP5021332

authors thank F. L. Shapiro and L. B. Pikel'ner for valuable advice and discussions, Wang Yung-Ch'ang and Ye. Dermendzhiyev for their participation in the work, B. N. Solov'yev and Yu. I. Kolgin for their help during the construction and adjustment of the device, and I. M. Stoletova and L. A. Filimonicheva for their help during the preparation of the scintillator. Orig. art. has: 6 formulas and 5 figures.

ASSOCIATION: Ob'yedinennyy institut yadernykh issledovaniy, Dubna (Joint Institute of Nuclear Research)

SUBMITTED: 27May64

ENCL: 00

SUB CODE: NP

NO REF SOV: 007

OTHER: 008

PC

Card 2/2

RYABOV, Yu.V.

Postoperative period in thyrotoxicosis patients. Khirurgiia
40 no.12:64-67 D '64. (MIRA 18:3)

1. Kafedra fakul'tetskoy khirurgii (zav.- prof. V.P. Mateshuk)
Yaroslavskogo meditsinskogo instituta.

VAN SHI-DI [Wang Shih-ti]; VAN YUN-CHAN [Wang Yung-ch'ang]; DERMENDZHIYEV, Ye.;
RYABOV, Yu.V.

Cross section of U^{235} fissure for neutrons of resonance energies.
Atom. energ. 19 no.1843-45 J1 '65. (MIRA 18:7)

RYABOV, Yu.V.

Immediate results of the surgical treatment of thyrotoxicosis.
Sov.med. 26 no.6:122-124 Je '62. (MIRA 15:11)

1. Iz kafedry fakul'tetskoy khirurgii (zav. - prof. V.P.Mateshuk)
Yaroslavskogo meditsinskogo instituta (rektor - prof. N.Ye.Yarygin).
(HYPERTHYROIDISM)

RYABOV, Yu. V., aspirant (Yaroslavl', poselok zheleznotorozhnikov, ul.
K. Marksa, d.5, kv.2)

Preoperative management of patients with thyrotoxicosis.

Vest.khir. no.6:13-19 '61.

(MIRA 15:1)

1. Iz fakul'tetskoy khirurgicheskoy kliniki (zav. - prof. V.P.
Mateshuk) Yaroslavskogo meditsinskogo instituta.
(THYROID GLAND--DISEASES) (AUTONOMIC DRUGS)

NIKOLAYEV, A.G., inzh.; RYABOV, Z.I., inzh.; CHERNOGRUD, P.G., inzh.;
FUGACHEV, D.K., inzh.

Improving the surface quality of rimmed steel ingots. Stal'
12 no.2:123-124 P '59. (MIRA 12:2)

1. Magnitogorskiy metallurgicheskiy kombinat.
(Steel ingots) (Surfaces (Technology))
(Metallurgical plants--Quality control)

SOV/133-59-2-7/26

AUTHORS: Nikolayev, A.G., Ryabov, Z.I., Chernograd, P.G.
and Pugachev, D.K. Engineers

TITLE: An Improvement in the Surface Quality of Rimming Steel
Ingots (Uluchsheniye kachestva poverkhnosti kipyashchego
slitka)

PERIODICAL: Stal', 1959, Nr 2, pp 123-124 (USSR)

ABSTRACT: One of the main defects of rimming steel ingots on the
Magnitogorsk Works were surface films. On the proposal
of F.D.Voronov (engineer) filling of the ingot moulds
fitted with sleeves was tested. Cylindrical (dia 400 mm)
and rectangular (500 x 600 mm) sleeves up to 710 mm high
made from sheets from 0.5 to 1.5 mm thick were tested.
As a first step the solubility of the sleeves in the steel
was tested. It was found that complete solution of the
sleeves is obtained if they are made from sheets up to
1 mm thick. The effectiveness of the application of
sleeves was tested by tapping heats into two ladles and
teeming one ladle into moulds (7 ton) with sleeves and the
other ladle into moulds without sleeves. The ingots
obtained were rolled into slabs and their surface quality
Card 1/2 was evaluated on the basis of the productivity of slab

SOV/133-59-2-7/26

An Improvement in the Surface Quality of Rimming Steel Ingots

dressing (tons per shift). The results obtained (Table 1 and 2) indicated that the use of sleeves decreased the amount of dressing required by a factor of 1.8. The overall economy obtained amounted to 0.45 -- 0.35 roubles/ton of steel. There is 1 figure and 2 tables.

ASSOCIATION: Magnitogorskiy Metallurgicheskiy Kombinat
(Magnitogorsk Metallurgical Combine)

Card 2/2

TOPCHIEVA, K. V.; SHARAYEV, O. K.; PEREL'MAN, A. I.; RYABOVA, A. A.

Effect of the porous structure of the aluminosilicate carrier
on the polymerizing activity of the chromium oxide catalyst.

Plast. massy no. 5:11-13 '64.

(MIRA 17:5)

BURSIN, Ye.Ye.; RYABOVA, A.A.

Comparison of the cost of production of a cubic meter of
unspecified lumber. Der.prom. 14 no.11:15-16 II '65.

(MIRA 18:11)

1. Tsentral'nyy nauchno-issledovatel'skiy institut mekhanicheskoy
obrabotki drevesiny.

GRODZOVSKAYA, R.I.; REABOVA, I.I.

Fast determination of the sulfur and chlorine content of additive
339 of the Central Scientific Research Institute of Aviation
Fuels and Lubricants. Nefteser. i neftekhim. no.4:37-39 '65.
(MIRA 18:5)

1. Omskiy neftepererabatyvayushchiy zavod.

L 46020-66 ENT(m)/EWP(j) IJP(g) RM

ACC NR: AP6021343

(A)

SOURCE CODE: UR/0318/66/000/002/0025/0027

AUTHOR: Shevlyakov, V. A.; Tseytlin, I. M.; Ryabova, A. L.

ORG: Omsk Petroleum Refinery (Omskiy neftepererabatyvayushchiy zavod); Omsk Tire Factory (Omskiy shinny zavod)

TITLE: Use of petrolatum for protection of rubbers from atmospheric aging ✓

SOURCE: Neftepererabotka i neftekhimiya, no. 2, 1966, 25-27

TOPIC TAGS: petroleum product, antioxidant additive, rubber chemical

ABSTRACT: Tests were performed to determine the protective properties of petrolatum obtained from a deparaffination unit. The data showed that petrolatum from Tuymazy Devonian petroleum increases the resistance of rubber to atmospheric aging, surpassing paraffin and Superlavox in protective properties and equalling Antilux in tests in vulcanizates prepared without using chemical antiozonants. Tests of protective waxes together with chemical antiozonants in tread rubbers based on butadiene-styrene rubber showed that in this case as well, the protective properties of petrolatum are higher than those of imported antiaging agents. The petrolatum studied can be successfully used as a physical antiaging agent in the production of tires and mechanical rubber goods. At the present time, this petrolatum is used under the name of "Anti-aging agent OM-1" in the tire industry, mechanical rubber goods industry, rubber foot-

Cord 1/2

UDC: 665.637.73-4:678.06

2/2 LC

M

Country : USSR
Category: Cultivated Plants. Fruits. Berries.

Abstr Jour: RZhBiol., No 22, 1958, No 100464

Author : Ryabova, A.N.

Inst : State Nikitsk Botanical Garden

Title : Fruit Setting in Sweet Cherry after Pollination
with the Pollen of Productive Pollinators Mixed
with Its Own Polen.

Orig Pub: Byul. nauchn. inform. Gos. Nikitsk. botan. sad,
1957, No 5-6, 38-39

Abstract: In 1950-1953 experiments with sweet cherry
varieties Chernaya Daybora, Zolotaya and
Bigarro Grollya, it was found upon the cas-
tration and isolation of the flowers, that
the pollen of the variety being pollinated,

Card : 1/2

COUNTRY : USSR M-8
 CATEGORY :
 ABS. JOUR. : RZBiol., No. 19, 1958, No. 37230
 AUTHOR : Ryabov, I. N.; Ryabova, A. N.; Guf, Z. V.
 INST. : Nikitskiy State Botanical Garden
 TITLE : Study of the Resistance of Peach Varieties
 to Leaf Curl Injury

ORIG. PUB. : Byul. nauchn. inform. Gos. Nikitsk. botan.
 sad, 1957, No 5-6, 25-28

ABSTRACT : Observations during 1951-1956 of 378 peach
 varieties have shown that no variety is completely immune.
 Most resistant are: Ansdan, Molozani, Salyut and Sukhumskiy
 Granzhevyy Iozdny. Moderately resistant -- Zolotoy Yubiley,
 Pushistyy Ranniy, Rochester, Kudasnik, Sochnyy, Nikitskiy,
 Russkiy, Min'on Bol'shoy Ranniy, and Yubileynyy. Strongly
 attacked are -- Arp, Greensboro, Sovetskiy, V.Chkalov,
 Irekrasnyy, Ret-front, Libertas, Zafran, Zolotaya Osen',
 and Karmen.

CARD: //

USSR/Cultivated Plants - Fruits. Berries.

M-6

Abs Jour : Ref Zhur - Biol., No 20, 1958, 91823

Author : Ryabova, A.N.

Inst : Nikitsk Botanical Garden.

Title : Studies on the Degree of Self-Fertility in Cherry Varieties and Sweet Cherry Hybrids in the Steppe Zone of Crimea.

Orig Pub : Byul. nauchn. inform. Gos. Nikitsk. botan. sad, 1957, No 5-6, 36-37.

Abstract : Observations were made of 14 varieties of cherry and 11 cherry x sweet cherry hybrids on the southern shore and in the steppe zone of the Crimea. The following varieties of cherry are self-sterile: Ranniy Geroy, Ostheim Griot, Lotovaya, Montrel'skaya Krasavitsa, Giant Morelle, Prusskaya and Podbel'skaya. The following are self-pollinating;

Card 1/2

USSR/Cultivated Plants. Fruits, Verries

M-8

Abs Jour : Ref Zhur - Biol., No 1, 1958, No 1736

was stable and positive, as compared to the results of pollination with the pollen of each individual variety contained in this mixture. It is recommended that 3 to 4 varieties having good mutual fertilizing capacity be used in combined wide scale communal planting.

Card : 2/2

COUNTRY	: USSR
CATEGORY	: Cultivated Plants. Fruits. Berries. Nuts. Tea. M
REF. JOUR.	: RZhBiol., Vol. 1, 1959, No. 1828
AUTHOR	: <u>Kyloova, A.M.</u>
INSTIT.	: State Nikitsk Botanical Garden
TITLE	: Setting of Cherry Fruits During Pollination with a Mixture of Pollen Varieties with Good and Bad Pollen-producing Qualities.
ORIG. PUB.	: Byul. nauchn. inform. Gos. Nikitsk. botan. sad, 1957, No. 5-6, 40-42
ABSTRACT	: In the Nikitsk Botanical garden in the years of 1950-1953 pollination experiments of the following varieties were carried out: red late Bluzner, Black Daiber, Golden and BigarraGrollia; these experiments were performed with one or two highly productive pollinators with the mixture of their pollen, and their mixture with unproductive pollinators (with a short-lived pollen and slight joining in the given pair). Out of 25 variants, in 22 variants, the per cent setting of fruits from the pollen introduction of unproductive pollinators decreased, among
ORIG.	: 1/1
	* Capacity.

RYABOVA, A.N.

Setting of cherries following pollinating with pollen of varieties with good fertilization capacities. Dokl. Akad. sel'khoz. 21 no.9: 29:31 '56. (MIRA 9:10)

1. Nikitskiy botanicheskiy sad imeni V.M. Molotova. Predstavleno akademikom P.N. Yakovlevym.

(Fertilisation of plants) (Cherry)

RYABOVA, A.S.
BUDAROV, I.P.; RYABOVA, A.S.

Method for determining the acidity of ethyl gasolines by means
of weak (85%) ethyl alcohol. Azerb. neft. khoz. 36 no. 4:36-38
Ap '57. (MLRA 10:6)

(Gasoline)

Ryabova, A. S.

Physical stability of gasolines. I. P. Budarov, A. P. Zarubin, and A. S. Ryabova. *Khim. i Tekhnol. Topliva i Masel* 1957; No. 5, 61-6. Changes in phys.-chem. properties of aviation and automotive gasolines were studied as a function of loss due to evapn. With increasing loss the octane nos. by the engine and temp. method, the BtBr content, the vapor pressure, and the ease of vaporization decrease. Tetraethyl lead content, dibromoethane content, and boiling temp. increase. B. Deklan

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BUDAROV, I.P.; RYABOVA, A.S.

Methods for determining the acidity of ethylated (colored)
gasolines. Khim.i tekhn.topl. no.11:55-60 N '56. (MLBA 9:11)

1. Nauchno-issledovatel'skiy institut goryuche-smasochnykh
materialov.

(Gasoline--Analysis)

Ryabova, A.S.

USSR /Chemical Technology. Chemical Products
and Their Application

I-16

Treatment of natural gases and petroleum.
Motor fuels. Lubricants.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31973

Author : Budarov I. P., Ryabova A.S.

Title : Methods of Determining the Acidity of Ethylated
(Colored) Gasolines

Orig Pub: Khimiya i tekhnol. topliva, 1956, No 11, 55-60

Abstract: For the removal of dyestuffs, on determining the
acidity of ethylated gasoline, use is made of the
method of treatment with activated carbon.

Card 1/1

DEDKOV, Yu.M.; KADANER, D.S.; PISARENKO, N.D.; RYABOVA, A.S.; SAVVIN, S.B.

Determination of zirconium in cast iron with chlorosulfophenol
C as reagent. Zav. lab. 30 no.6:654-655 '64 (MIRA 17:8)

1. Nauchno-issledovatel'skiy i proyektno-tekhnologicheskoy in-
stitut mashinostroyeniya.

RYABOVA, A.S.

USSR/Chemical Technology - Chemical Products and Their I-8
Application. Treatment of Natural Gases and Petroleum.
Motor and Jet Fuels. Lubricants.

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 2582

Author : Budarov, I.P., Zarubin, A.P., Subbotin, A.P., Ryabova, A.S

Inst : -

Title : Physical Stability of Gasolines

Orig Pub : Khimiya i tekhnol. topliva i masel, 1957, No 5, 61-66

Abstract : Results of a laboratory study of the correlation between evaporation losses of aviation and automotive gasolines and their physico-chemical properties. As the losses increase the following characteristics are found to be decreased: octane rating according to the motor and temperature methods, ethyl bromide content, vapor tension and volatility according to the method of Budarov. Grade rating, in rich mixture, content of tetra-ethyl lead and dibromethane, temperature at which boiling starts and

Card 1/2

SAVVIN, S.B.; KADANER, D.S.; RYABOVA, A.S.

Photometric determination of zirconium in steel and cast
iron using arsenazo III. Zhur. anal. khim. 19 no.5:561-563
'64. (MIRA 17:8)

1. Institut geokhimii i analiticheskoy khimii imeni Vernadskogo
AN SSSR i Nauchno-issledovatel'skiy i proyektno-tekhnologicheskoy
institut mashinostroyeniya, Kramatorsk.

RYABOVA, A.S.; BELOVA, S.R.; SHARAPOV, V.I.

Determination of the tetraethyl-lead content in automobile
gasoline by the chromate method. Nefteper. i neftekhim.
no.2:11-12 '63. (MIRA 17:1)

SYNOPSIS
BUDAROV, I.P.; ZARUBIN, A.P.; SUBBOTIN, A.P.; RYABOVA, A.S.

Physical stability of gasoline. Khim.i tekhn.topl.i masel no.5:61-66
Mz '57. (MLRA 10:7)

(Gasoline)

1 30540-45
ACCESSION NR: AP5009157 S/0114/64/000/011/0020/0022
AUTHOR: Gokhshteyn, D. P. (Doctor of technical sciences); Dekhtyarev, V. L. 7
(Candidate of technical sciences); Tishchenko, B. S. (Engineer); Olesevich, Ye. K. B
(Engineer); Khalaydzh, V. N. (Engineer); Ryabova, A. S. (Engineer); Bykov, V. N.
(Engineer); Kozorez, A. I. (Engineer)
TITLE: Medium power carbon dioxide power installation
SOURCE: Energomashinostroyeniye, no.11, 1964, 20-22
TOPIC TAGS: electric power plant, carbon dioxide, electric power source
ABSTRACT: Theoretical principles for carbon dioxide power installations
worked out at the Odessa Technological Institute imeni M. V. Lomonosov
have shown the possibility for building high power compact units which are
more economical than steam and gas turbines. Results of research on an
installation of this type with a power of 50 Mw, the UKEU-50, show that the
efficiency advantage of the carbon dioxide installation over steam units
increases with a transition from high to medium power.

Cord 1/3

L 33542-65

ACCESSION NR: AP5009157

Following is the efficiency of the installation and its elements:

Generator power of the installation N , Mw	50.0
Consumption of carbon dioxide G , kg/sec	269.0
Efficiency, %:	
of the compressor, η_c	0.88
of the pump, η_p	0.80
of the turbines, η_t	0.90
of the boiler, η_b	0.92
of the generator, η_g	0.985
mechanical, η_m	0.99
of the thermal flow, η_{tr}	0.99
of internal requirements, η_{ir}	0.97
electrical efficiency of the engine room, η_e	44.1
net, η_{net}	39.0

Card 2/3

L 32541-65

ACCESSION NR: AP5009157

In spite of the low starting temperature of 565°, the 39% efficiency of the carbon dioxide installation exceeds that of gas turbine units with a starting temperature of 675° and higher. Orig. art. has: 1 table, 3 figures.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: EE

NO REF SOV: 008

OTHER: 000

JPRS

Card 3/3

RYABOVA, A.V., prepodavatel'; AL'MENOVA, A.F., prepodavatel'; KUCHUSHEVA,
I.I., prepodavatel'; PAVLOVSKAYA, T.M., prepodavatel'; OZEROVA,
A.G., red.; SHCHERBAKOVA, G.V., red.; VLADIMIRTSEV, V.P., red.
izd-va; KHUSNUTDINOV, Sh.S., tekhn.red.; GAIKINA, V.N., tekhn.red.

[Dressmaking] Kroika i shit'e. Kazan', Tatarskoe knizhnoe izd-vo,
1959. 831 p. (MIRA 14:2)

1. Trekhgodichnyye kursy kroyki i shit'ya pri klube im. V.P.
Menzhinskogo Ministerstva vnutrennikh del Tatarskoy ASSR (for
Rybova).

(Dressmaking--Pattern design) (Sewing)

RYABOVA, D.I. (Moskva).

The study of mineral fertilizers in chemical cycles. Khim. v shkole
12 no.3:40-45 My-Je '57. (MIRA 10:6)
(Agricultural chemistry)

RYABOVA, D.V.

VINOGRADOV, G.V.; KUSAKOV, M.M.; SANIN, P.I.; ZASLAVSKIY, Yu.S.; RAZUMOVSKAYA,
E.A.; UL'YANOVA, A.V.; RYABOVA, D.V.

Use of radioactive indicators in studying the action of organic
thiophosphoric additives in oils. Khim. i tekhn. topl. no. 6:14-20
Je '56. (MIRA 9:9)

1. Institut nefti AN SSSR.
(Oils) (Radioactive tracers--Industrial applications)

RYABOVA, D.I. (g. Moskva)

Familiarizing students with the main branches of the nitrogen
industry as part of extracurricular work. *Khim. v shkole* 14
no.1:61-67 Ja-F '59. (MIRA 12:2)

(Nitrogen industries) (Chemistry--Study and teaching)

RYABOVA, D.I., zasluzhennaya uchitel'nitsa shkoly RSFSR; LUK'YANOV, P.M.
professor.

Handbook for practical studies ("Training models of industrial chemical equipment." D.A.Epshtein, S.A.Shurkin. Reviewed by D.I.Riabova, P.M.Lukk'ianov). Khim. v shkole 10 no.1:73-74 Ja-F '55. (MIRA 8:4)
(Chemical engineering—Study and teaching) (Epshtein, David Arkad'evich, 1898-) (Shurkin, S.A.)

39530

S/065/62/000/008/002/003
E075/E135

11.9700

AUTHORS:

Shor, G.I., Zaslavskiy, Yu.S., Morozova, I.A., and
Ryabova, D.V.

TITLE:

Electrochemical aspects of the mechanism of action
of detergent additives to motor oils

PERIODICAL: Khimiya i tekhnologiya topliv i masel, no.8, 1962,
58-66

TEXT:

Electrical conductivity measurements of solutions of
detergent additives in mineral oils were carried out in the belief
that ionic dissociation of the additives, followed by subsequent
adsorption of the ions on carbonaceous particles and metal
surfaces, constitutes the mechanism of action of most detergent
additives. The additives investigated were: alkylphenate -
formaldehyde condensation product 8HMM НП-370 (VNII NP-370),
high-ash calcium sulphonate ПМС (PMS), and their mixtures.
Different amounts of the additives were dissolved in oil AC-5HK3
(AS-5 NKZ). The conductivity measurements were carried out with a
microammeter (0.1 amp, full scale deflection) and a teraohmmeter
MOM-4 (MOM-4) giving a d.c. of 105 V. All the solutions obeyed
Card 1/3

Electrochemical aspects of the ...

S/065/62/000/008/002/003
E075/E135

Ohm's law, thus showing that they are non-aqueous electrolytes. Some of the additive mixtures dissolved in the oil gave considerably increased conductivities compared with the solutions containing individual additives and the same cation concentration, which indicated that the additive mixtures dissociated to a considerably higher degree than the single additives. Experiments with a metal plate heated to 250 °C and covered with a thin film of oil containing the additives with Ca⁴⁵ and Cl⁴ showed that the additives formed films on the metal surface. By studying deposition of soot particles labelled with T²⁰⁴ on the hot plate and adsorption of the additives with labelled Ca atoms on the metal surface in the presence of soot, it was established that the higher the degree of additive dissociation, the more effective its detergent activity. For a number of alkyl phenate additives the admixture of sulphonates did not give increased electrical conductivity, presumably due to their low solubility. All batches of the investigated additive VNII NP-370 with the added Ca sulphonate were completely soluble in mineral oils, which gave high electrical conductivities. Measurements of the electrical

Card 2/3

Electrochemical aspects of the ... S/065/62/000/008/002/003
E075/E135

conductivity of detergent additive solutions in motor oils
permitted carrying out preliminary laboratory evaluation of the
detergent effectiveness of additives and their mixtures, and
control of the additive quality.
There are 4 figures and 5 tables.

ASSOCIATION: VNII NP

X

Card 3/3

SHOR, G.I.; ZASLAVSKIY, Yu.S.; MOROZOVA, I.A.; RYABOVA, D.V.

Electrochemical aspects of the mechanism involved in the action
of dispersing additives to motor oils. Khim.i tekhn.topl.i masel
7 no.8:58-66 Ag '62. (MIRA 15:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke
nefti i gazov i polucheniye iskusstvennogo zhidkogo topliva.
(Lubrication and lubricants--Additives)

L 20330-63

EPF(c)/EAT(m)/BDS

AFFTC/AFGC

1r-4 BN/HH/DJ

S/2664/61/000/000/0264/0269

ACCESSION NR: AT3001998

AUTHORS: Zaslavskiy, Yu. S.; Shor, G. I.; Shneyerova, R. N.; Lebedeva, F. B.; Morozova, I. A.; Ryabova, D. V.; Stukin, A. D.; Yevstigneyev, Ye. V.; Yurchenko, P. F.; Nizhnik, V. Ya.

TITLE: Methods of investigation of the effectiveness of additives. Radioactive-tracer methods for the investigation of the functional properties of oils with additives.

SOURCE: Prisdki k maslam i toplivam; trudy nauchno-tekhnicheskogo soveshchaniya. Moscow, Gostoptekhizdat, 1961, 264-269.

TOPIC TAGS: lubricant, lubrication, additive, radioactive, tracer, test, isotope, tagging, tagged, electrophoresis, dispersion, soot, detergent, varnish, wear, antiwear, seizure, antiseizure, Ti204, Ca45, Co60, Fe59, Ag110, beta radiation, As-5, VNII NP-354.

ABSTRACT: In addition to a literature survey on the use of radioactive tracer (RAT) methods for testing of the functional and operational properties of oils with additives, the paper describes several newly developed Soviet methods: (1) The VNII NP method for the RAT study of the electrokinetic processes involved in the

Card 1/3

L 20330-63

ACCESSION NR: AT3001998

mechanism of the action of some dispersion-augmenting additives to engine oils. In this method, the RAT radiation counters are employed simultaneously as electrodes for the formation of an electrical field and for the registration of the displacements of the tagged dispersive phase. The soot that simulates the dispersive phase (oxidation products of oil and fuel combustion) was tagged by the radioactive (RA) isotope Ti^{204} . The experimental equipment is schematically portrayed and described, and a diagram of the electrophoresis of the tagged soot in AS-5 engine oil (an S-containing-crude derivative) with VNII NP-354 additive is shown (counter readings in pulses/sec vs. time in min). (2) RAT methods for the investigation of the detergent properties of oils with additives. The degree of varnish formation is measured with a method based on the measurement of the thickness of varnish film by means of its absorption of the beta-radiation of Co^{60} . $Co^{60}(NO_3)_2$ served to activate areas on a piston which were not subject to wear. The amount of varnish film formed on the piston surface during a given testing period was evaluated with the aid of a calibrated graph that expressed the change in the intensity of radiation in units of the density of varnish film (in mg/dm^2). Test results, comprising the amount of deposits and the amount of soot in the deposits, for AS-5 oil with various additives, are tabulated. RAT methods, developed at the VNII VP for the evaluation of the chemical activity of antiseizure additives, are based on the postulate that the most effective antiseizure additives must be those chemical

Card 2/3

L 20330-63

ACCESSION NR: AT3001998

compounds that have the greatest corrosional aggressiveness. The chemical activity of such additives was evaluated by the transfer kinetics of radioactive steel (Fe^{59} , neutron irradiated) or Cu (activated by tracer quantities of Ag^{110} in fused Cu). Tests of the radiometric determination of the chemical activity of additives are shown. Inasmuch as chemically active antiseizure additives may lead to appreciable chemical wear of friction surfaces under normal and even small loads, the VNII NP has developed a RAT method for an evaluation of the wear properties of oil with additives on a specially designed frictional-wear tester. The operative part of the machine is activated with Co^{60} . Small quantities of oil (appx. 1 cm^3) are employed; the global radioactivity of the oil is measured. Loads up to 80 kg/cm^2 at 1,000 rpm and oil T up to 250°C are attainable. Test results are graphed. Orig. art. has 5 figures and 2 tables.

ASSOCIATION: VNII NP

SUBMITTED: 00

DATE ACQ: 23Jan63

ENCL: 00

SUB CODE: FL, CH, EL

NO REF SOV: 005

OTHER: 006

Card 3/3

RYABOVA, D. V.

S/081/62/000/005/096/112
3160/3138

11.9700
AUTHORS:

Zaslavskiy, Yu. S., Shor, G. I., Shneyerova, R. N.,
Lebedeva, F. B., ~~Morozova, I. A.~~ Ryabova, D. V.,
Stukin, A. D., Yevstigneyev, Ye. V., Iurchenko, P. F.,
Nizhnik, V. Ya.

TITLE:

Radioactive tracer methods for studying the functional
properties of oils with additives

PERIODICAL:

Referativnyy zhurnal. Khimiya, no. 5, 1962, 534, abstract
5M262 (Sb. "Prisadki k maslam i toplivam", M.,
Gostoptekhizdat, 1961, 263 - 269)

TEXT: A short description is given of the radioactive tracer method
developed in the VNIINP for studying electrokinetic processes connected
with the mechanism of the action of certain dispersive additives for
heavy diesel lubricating oils. A diagram of the experimental equipment
is given. Its main feature is the combined use of radiation counters as
electrodes for producing the electric field and for recording the movement
of the labelled dispersed phase. Soot with the radioactive isotope Tl 204

Card 1/2

S/081/62/000/005/096/112
B160/B136

Radioactive tracer methods for...

was used to model the dispersed phase (oil oxidation and fuel combustion products). In the radioisotope method of studying the detergent properties of oils with additives the amount of gummy deposit was measured from the absorption of ^{60}Co beta radiation in it. The method of studying the detergent properties of oils with additives, based on the oxidation of a thin layer of oil on a heated strip of steel, has been improved by radiometric measurement of the deposits, using Ca^{45} as a source. The chemical activity of anticorrosion additives was estimated by determining the kinetics of the transitions from radioactive steel (irradiated with neutrons via Fe^{59}) or copper (activated by introducing tracer amounts of Ag^{110} into molten copper) to the oil, under the influence of the test additives. [Abstracter's note: Complete translation]

Card 2/2

RYABOVA, E. V.

Ryabova, E. V. The problem of a wedge striking a thread. Vestnik Moskov. Univ. Ser. Mat. Meh. Astr. Fiz. Him. 11 (1956), no. 1, 57-62. (Russian)

The author presents a general discussion of the vibra-

Distr. 4F1/4E4f/4E2b

tion of an elastic thread (wire) under the influence of the striking action of a rigid wedge. A system of three partial differential equations contains the explicit solution to the problem in question. By virtue of the fact that these equations are inhomogeneous the author proposes to solve them by means of successive approximations. Some boundary conditions are also deduced from geometrical considerations. The method of approximation adopted is shown to converge in general; as a matter of fact, she claims that only the first-order approximation yields high accuracy. It seems to the present reviewer, however, that the author's analysis is rather scanty and important details are lacking. And, therefore, the problem set forth is virtually still unsolved. K. Bhagwandin.

I-FW

33

82

41

RYABOVA, E.V.

Transverse impact traveling at varying speeds along a flexible cord.
(MLRA 7:1)
Vest.Mosk.un. 8 no.10:85-91 0 '53.
(Impact) (Mathematical physics)

GORODETSKIY, Aleksey Afanas'yevich, prof.; SIVACHENKO, Tamara Porfir'yevna;
KHOMUTOVSKIY, Otton Al'fredovich; RYABOVA, Era Zinov'yevna; CHEBO-
TAREV, Ye.Ye., red.; GITSHTEYN, A.D., tekhred.

[Excretion of some radioactive substances from the body] Vyvedenie
iz organizma nekotorykh radioaktivnykh veshchestv. Kiev, Gos.
med.izd-vo USSR, 1959. 199 p. (MIRA 13:3)

1. Chlen-korrespondent AN USSR (for Gorodetskiy).
(RADIOACTIVE SUBSTANCES--TOXICOLOGY)

URV

ACC NR: AM5001716

Monograph

Gorodetskiy, Aleksey Aranas'yevich; Pel'kis, Petr Solomonovich; Ryabova Era
Zinov'yevna; Dubenko, Roza Grigor'yevna

Antiradiation properties of aryl amides and aryl hydrazides of thiocarbonic acids
(Protivoluchevyye svoystva arilamidov i arilgidrazidov tiokarbonovykh kislots)
Kiev, Izd-vo "Naukova dumka," 1964. 110 p. illus., biblio. 1600 copies printed.
(At head of title: Akademiya nauk Ukrainskoy SSR. Institut fiziologii im.
A. A. Bogomol'tsa. Institut organicheskoy khimii)

TOPIC TAGS: antiradiation drug, radiation protection, amide, hydrazide, pharmacology

PURPOSE AND COVERAGE: This monograph is the result of searches for and tests of new antiradiation substances. A series of substituted aryl amides and aryl hydrazides of thiocarboxylic acids were synthesized and investigated. The compounds of this series are reducing agents, capable of forming various inner complexes, and also, depending on pH, can exist in the thion or thiol form. Various symmetrical and unsymmetrical derivatives of thiocarbonyl, 1, 5-di-phenylthiocarbonylhydrazide, were also synthesized and biologically investigated. Thirty-six newly synthesized substances were subjected to biological testing of their prophylactic properties. Together with investigations of the effect of the synthesized preparations on the clinical course and result of radiation injuries, the toxicological and pharmacological properties of the most effective

Card 1/2

ACC NR: AM5001716

substances were studied, and also the distribution of the compounds, means and rate of their elimination from the organism. The monograph is intended for radiobiologists, synthetic chemists, biologists, and doctors.

TABLE OF CONTENTS

Introduction — 3

Ch. I. Antiradiation properties of nitrogen- and sulfur-containing organic compounds — 5

Ch. II. Derivatives of thioctanilide and their prophylactic antiradiation action — 22

Ch. III. Substituted 1, 5-diphenylthiocarbonylhydrazides and their antiradiation effect — 53

Ch. IV. Elimination of cesium-134 from the organism under the influence of 1, 5-diphenylthiocarbonylhydrazide derivatives — 94

Conclusion — 101

Bibliography — 106

SUB CODE: 07/ SUBM DATE: 13Mar64/ SOV REF: 064/ OTH REF: 134/ [13]

Card 2/2

L 54650-65

ACCESSION NR: AT5014957

UR/0000/65/000/000/0030/0042

12
B+

AUTHOR: Shur'yan, I. M.; Ryabova, E. Z.; Rudakov, N. P.

TITLE: Peculiarities of the effects of neutron and x-ray radiation on the hematopoietic and cardiovascular systems

SOURCE: An UkrSSR. Institut fiziologii. Biologicheskoye deystviye neytronnogo izlucheniya (Biological effect of neutron radiation). Kiev, Naukova dumka, 1965. 30-42

TOPIC TAGS: neutron radiation, x ray radiation, biological effect, cardiovascular system, hematopoiesis, rat

ABSTRACT: The comparative effects of x-rays and neutrons in biologically equivalent doses on the hematopoietic and cardiovascular systems of 200 rats were studied. The 200 rats weighed an average of 140 g. Irradiation took place in the horizontal channel of a nuclear reactor. In the first series of tests, rats were exposed to 400-rad doses (reactor power, 4.0 Mw) of fast neutrons and 600-r doses of x-rays with a radiation duration of 23.6 min. In the second series, animals were irradiated with a fast neutron dose of 175 rad (reactor power, 8 Mw), in the third series, with 200 rad (10 Mw), and in the fourth series, with 800 r. The morphological con-

Card 1/5

L 54650-65

ACCESSION NR: AT5014957

tent of peripheral blood, erythrocyte resistance, and electrocardiograms were studied 3 times before and 4, 8, 12, 16, 20, 24, and 30 days after irradiation. Some results of the tests are given in Tables 1, 2, and 3 of the Enclosure. It was concluded that fast neutrons differed from x-rays in their biological effects, evoking more severe changes in the content of the blood (reticulocyte content, general leukocyte quantity, absolute number of lymphocytes and neutrophils, and thrombocyte quantity). Recovery from the effects of neutrons took longer than recovery from x-rays. The blood indices of irradiated animals had not normalized even after a month. Erythrocyte stability was more sharply lowered, equilibrium processes were more noticeably altered, and qualitative changes in erythropoiesis were greater as a result of neutron irradiation. Finally, fast neutrons not only evoked dystrophic changes in the cardiovascular system as did x-rays, but produced injuries to cardiac muscle. Orig. art. has: 3 plates and 3 figures. [CD]

ASSOCIATION: Institut fiziologii imeni A. A. Bogomol'tsa AN UkrSSR (Institute of Physiology, AN UkrSSR)

SUBMITTED: 22Feb65

ENCL: 03

SUB CODE: IS

NO REF SOV: 008

OTHER: 009

ATD PRESS: 4026

Card 2/5

L 54650-65

ACCESSION NR: AT5014957

ENCLOSURE: 01

Table 1. Morphological content of the peripheral blood
of rats irradiated with 400-rad fast neutrons

indices	norm	4th day	8th day	12th day	16th day	20th day	24th day	30th day
Hemoglobin	38.8 %— 14.8 g 6700000	74.4 %— 12.4 g 6800000	67.8 %— 11.3 g 6420000	66.6 %— 11.1 g 4690000	81.0 %— 13.5 g 5200000	62.0 %— 13.7 g 6416000	78.0 %— 13.0 g 5960000	76.8 %— 12.8 g 5940000
Erythrocytes	14820	1262	2814	5200	7666	6183	6420	9440
Leukocytes	0.5	0.6	0.5	0.6	0.7	0.6	0.6	0.6
Color index	46	18	19	22	30	46	49	59
Reticulocytes	285000	163000	182000	203000	298000	314000	299000	291000
Thrombocytes								
Neutrophiles	139	19	22	84	126	175	292	285
Stabnuclear	4333	319	874	1975	2503	2161	3152	2881
Segmentonnuclear	252	11	46	107	152	134	122	297
Eosinophiles	0	0	0	0	0	0	0	0
Basophiles	9722	818	1692	2847	4535	3515	2655	5551
Lymphocytes	196	58	102	108	193	63	93	213
Monocytes	178	39	78	79	152	112	106	213
Tuerck's cells								

Card 3/5

L 54650-65

ACCESSION NR: AT5014957

ENCLOSURE: 02

Table 2. Morphological current of the peripheral blood
of rats irradiated with 600-r x-rays.

indices	norm	4th day	8th day	12th day	16th day	20th day	24th day	30th day
Hemoglobin	90.0 %— 15.0 g 6963000	82.2 %— 13.7 g 5970000	72.0 %— 12.0 g 6130000	64.2 %— 10.7 g 4740000	58.8 %— 9.8 g 5480000	73.2 %— 12.2 g 5970000	81.0 %— 13.5 g 5317000	81.0 %— 13.5 g 6410000
Erythrocytes	12390	2870	4933	6788	7613	11512	12412	16112
Leukocytes	0.6	0.6	0.5	0.6	0.5	0.6	0.6	0.6
Color index	54	32	38	54	59	65	76	57
Reticulocytes	274000	233000	264000	259000	250000	285000	283000	323000
Thrombocytes								
Neutrophils								
Stabnuclear	118	25	178	43	144	219	190	257
Segmentonuclear	3815	1378	1893	2638	3294	4528	5798	6636
Eosinophiles	280	29	68	51	132	263	289	421
Basophiles	0	0	0	0	0	0	0	0
Lymphocytes	7880	1330	2590	3728	3785	6256	5819	8321
Monocytes	182	63	148	189	132	157	136	251
Tuerck's cells	115	45	58	139	126	89	180	226

Card 4/5

L 54650-65

ACCESSION NR: AT5014957

ENCLOSURE: 03

Table 3. Morphological content of the peripheral blood of rats irradiated with 800-r x-rays

indices	norm	4th day	8th day	12th day	16th day	20th day	24th day	30th day
Hemoglobin	81.0%— 13.5 g	76.8%— 12.8 g	63.0%— 10.5 g	31.8%— 5.3 g	84.2%— 5.7 g	61.0%— 8.5 g	9.8%— 8.3 g	60.0%— 10.0 g
Erythrocytes	6528000	5700000	6210000	3230000	3450000	4560000	1550000	4580000
Leukocytes	14810	800	2680	1630	1733	5468	6233	11300
Color index	0.6	0.6	0.6	0.4	0.5	0.6	0.5	0.6
Reticulocytes	39	28	23	21	23	26	27	42
Thrombocytes	275	250	241	194	208	223	213	287
Neutrophiles								
Stabnuclear	29	7	48	40	63	228	246	226
Segmentonuclear	5191	535	960	735	768	2904	2972	4673
Eosinophiles	494	6	7	12	25	21	0	0
Basophiles	0	0	0	0	0	0	0	0
Lymphocytes	8588	196	1614	702	703	1943	2432	5304
Monocytes	233	30	124	74	95	252	373	605
Tuerck's cells	275	26	107	67	79	118	210	492

Card 5/5

GORODETSKIY, Aleksey Afanas'yevich, prof.; PEL'KIS, Petr Solomonovich,
doktor khim. nauk, prof.; RYABOVA, Era Zinov'yevna; DUBENKO,
Roza Grigor'yevna; YANKOVSKAYA, Z.B., red.

[Radiation-protective properties of arylamides and
arylhydrazides of thiocarboxylic acids] Protivoluchevye
svoistva arilamidov i arilgidrazidov tiokarbonovykh kislot.
Kiev, "Naukova dumka," 1964. 110 p. (MIRA 17:8)

1. Chlen-korrespondent AN Ukr.SSR (for Gorodetskiy).

RYABOVA, E.Z.

Comparative effect of fast neutrons, X rays and radioactive phosphorus on the functional state of the heart. Fiziol. zhur. [Ukr.] 11 no.6:796-801 M-D '65. (MIFA 19:1)

1. Laboratoriya radiatsionnoy zashchity Instituta fiziologii im. A.A. Bogomol'tsa AN UkrSSR, Kiyev. Submitted January 7, 1965.

RYABOVA, E. Z., Candidate Med Sci (diss) -- "Acceleration of removal of radioactive cesium-134 from the organism using certain complex-forming substances". Kiev, 1959. 12 pp (Acad Sci Ukr SSR, Inst of Physiology im A. A. Bogomolets), 150 copies (KL, No 25, 1959, 142)

L 41615-65 EWG(j)/EWT(m) GS
ACCESSION NR: AT5008044

S/0000/64/000/000/0179/0192

AUTHOR: Gorodetskiy, A. A.; Dubenko, R. G.; Pel'kis, P. S.; Ryabova, E. Z.

TITLE: Derivatives of diarylthiocarbonylhydrazides in the prophylaxis of acute radiation sickness

SOURCE: Patogenez, eksperimental'naya profilaktika i terapiya luchevykh porazheniy (Pathogenesis, experimental prevention, and therapy of radiation injuries); sbornik statey. Moscow, Izd-vo Meditsina, 1964, 179-192

TOPIC TAGS: diarylthiocarbonylhydrazide, radiation protection, radiation sickness

ABSTRACT: The action of new radiation protection preparations of the group of diarylthiocarbonylhydrazides and diarylthiocarbamide was studied. Various derivatives of 1,5-diphenylthiocarbonylhydrazide were synthesized and studied as radiation protection agents. It was shown that these derivatives are able to form internal complexes with cations of heavy metals, that they possess reducing properties, and, depending on the pH of the medium, react in the thion or thiol form. The greatest protective activity in the irradiation of animals with lethal doses of x-rays is exhibited by the derivatives of 1,5-diphenylthiocarbonylhydrazide and 1,3-diphenylthiocarbamide with substitutions which give them solubility in water: disodium

Card 1/2

L 41615-65

ACCESSION NR: AT5008044

salt 1,5-di-(4-sulfonephenyl)-thiocarbohydrazide (preparation No. 12), disodium salt 1,5-di-(4-carboxyphenyl)-thiocarbohydrazide (preparation No. 19), 1,5-(4-amidosulfanyphenyl)-thiocarbohydrazide (preparation No. 9), and disodium salt 1,3-di-(*m*-oxy, *n*-carboxyphenyl)-thiocarbamide (preparation No. 26). The most effective preparations (Nos. 12 and 26) possess marked toxic properties. Orig. art. has: 5 figures, 3 tables, 8 formulas

ASSOCIATION: none

SUBMITTED: 19Aug64

NO REF SOV: 000

ENCL: 00

SUB CODE: LS,OC

OTHER: 000

ml
Card 2/2

RYABOVA, E.Z.

Effect of certain complex-forming substances on the excretion
of cesium 134 from the body. Vrach.delo no.4:377-379 Ap'58
(MIRA 11:6)

1. Kafedra radiologii (zav. - chlen-korrespondent AN USSR,
prof. A.A. Gorodetskiy) Kiyevskogo instituta usovershenstvovaniya
vrachev.

(CESIUM IN THE BODY)

RYABOVA, G.G.
IVANOV, O.S.; NOVIKOVA, O.A.; RYABOVA, G.G.

Study of the system iron -- cobalt -- nickel -- aluminum, based on
the section with 50 % iron. Izv.Sekt.fiz.-khim.anal. 22:129-139 '53.
(MLRA 7:5)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova
Akademii nauk SSSR. (Iron-cobalt-nickel-aluminum alloys)

RyABOVA, G. G.

PHASE: BOOK EXPLOITATION 807/2713

International Conference on the Peaceful Use of Atomic Energy. 2nd, Geneva, 1958

Radlyady sovetskikh vchenykh; polucheniye i primeneniye izotopov (Reports of Soviet Scientists: Production and Application of Isotopes) Moscow, Atomizdat, 1959. 308 p. (Series: Est. Study, vol. 6) 8,000 copies printed.

Ms. (title page); G.V. Burdakov, Academician, and I.I. Novikov, Corresponding Member, USSR Academy of Sciences; Ed. (inside book): Z.D. Andreyenko. Tech. Ed.: Z.N. Andreyenko.

FOREWORD. This book is intended for scientists, engineers, physicians, and biologists engaged in the production and application of atomic energy to peaceful uses; for professors and graduate and nongraduate students of higher technical schools where nuclear science is taught; and for the general public interested in atomic science and technology.

CONTENTS. This is volume 6 of a 6-volume set of reports delivered by Soviet scientists at the Second International Conference on the Peaceful Use of Atomic Energy held in Geneva from September 1 to 13, 1958. Volume 6 contains 12 reports on: 1) modern methods for the production of stable fissionable isotopes and their labeled compounds, 2) research results obtained with the aid of isotopes in the field of chemistry, metallurgy, machine building, and agriculture, and 3) development of isotopes in medicine. Volume 6 was edited by: G.V. Burdakov, Academician, and I.I. Novikov, Corresponding Member, USSR Academy of Sciences; and V.V. Sedov, Candidate of Medical Sciences. See 807/2081 for titles of volumes of the set. References appear at the end of the articles.

3. Yakovlev, G.F., and V.B. Peder. Means of Developing Remote Control Methods in the Radiochemical Characterization of the AN SSSR (Report No. 2036)

b. Malkov, K.P., A.G. Zaitsevich, A.B. Pechkov, and I.B. Danilov. Commercial Production of Deuterium by the Low-Temperature Distillation Method (Report No. 2352)

5. Gerasimov, I.G., R.Ya. Kuznetsov, and V.K. Tikhonov. Separation of Isotopes by Diffusion in a Steam Flow (Report No. 2036)

6. Zolotarev, V.S., A.I. Il'in, and Ye.G. Kozar. Separation of Isotopes on Electromagnetic Units in the Soviet Union (Report No. 2305)

7. Alakozov, B.A., S.Y. Belyagin, V.S. Zolotarev, B.Y. Pechkov, Ye.G. Chernomolov, and G.Ya. Shcherbin. Separation of Isotopes of Rare-earth Elements by the Electromagnetic Method (Report No. 2217)

8. Burdakov, G.V., B.M. Makov, M.S. Ioffe, R.G. Brashnev, and G.M. Fradkin. Ion Source for the Separation of Stable Isotopes (Report No. 2203)

9. Beilin, M.Y., and P.M. Morozov. Electric Field Effect in Ion Beams on Stable Isotope Separation by the Electromagnetic Method (Report No. 2304)

10. Bogdanov, B.G., P.L. Grunin, G.I. Yermolayev, and I.D. Shkulin. Use of Radioactive Isotopes in Metallurgical Research (Report No. 2218)

11. Gerasimov, I.G., V.A. Yemshikovskiy, and I.M. Tatars. The Theory and Practice of Relay-type Instruments Based on Radioactive Isotopes (Report No. 2352)

12. Zaslavskiy, Yu.S., G.I. Shor, and B.M. Morozov. Simulating the Mechanism of Protection of Rubbing Surfaces Against Wear Due to Corrosion (Report No. 2158)

13. Burdakov, G.V., and L.M. Matysch. The TULIO, BULIO, and GULIO as Sources of Radiation for Checking Thin-walled Products (Report No. 2223)

14. Brak, B.I., A.B. Zavyalov, and G.I. Kopylov. Studying the Redistribution of Elements in Metal Alloys and Weld Compounds by Autoradiography and Radiometric Methods (Report No. 2236)

15. Grunin, P.L., A.I. Yevtyabin, V.S. Zolotarev, G.D. Rybakov, G.B. Fedorov. Studying the Diffusion and Distribution of Elements in Alloys of Zirconium and Titanium Pairs by the Radioactive Isotope Method (Report No. 2524)

RYABOVA O.O.

ABSTRACT

Card 2/3

Card 1/1

RYABOVA, G.G.; BABIKOVA, Yu.F.; GRUZIN, P.L.

Distribution and electrodiffusion of tin in zirconium alloys.
Met. i metalloved. chist. met. no. 2:115-127 '60. (MIRA 13:12)
(Zirconium alloys--Metallography)
(Diffusion)

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29032
S/081/61/000/018/002/027
B104/B101

AUTHORS: Gruzin, P. L., Ryabova, G. G.

TITLE: Study of the influence of the structure factor on diffusion in zirconium and its alloys

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 18, 1961, 31, abstract 18B196 (Sb. "Metallurgiya i metallovedeniye chistykh metallov". M., Atomizdat, no. 2, 1960, 134-140)

TEXT: The influence of the structure factor on self-diffusion of Zr and diffusion of Sn in zirconium alloys was studied. The alloys were smelted down in an arc furnace and subjected to a homogenizing annealing for 10 hr. The self-diffusion coefficient and the diffusion coefficient were determined by using Zr^{95} and $Sn^{113,123}$ isotopes, and the method of removing layers, and by measuring the radioactivity of the rest. In order to study the influence of the structure factor on self-diffusion in β -Zr, some of the specimens were annealed by the conventional method. The other specimens were heated to $1200^{\circ}C$, and kept at this temperature for

Card 1/2

Study of the influence of the...

29032
S/081/61/000/018/002/027
B104/B101

20 minutes. Subsequently, the specimens were cooled to the temperature of diffusion annealing and kept at this temperature. The self-diffusion parameters were found to depend on the structure state. This dependence is the greater, the lower the temperature. The influence of the structure (hardening and annealing) on Sn diffusion in Zr-Sn alloys in the range of α -solutions (0.5; 1, and 2% Sn) was studied. In all cases, the diffusion coefficient of Sn in specimens with martensite structure was greater than in annealed specimens. With an increase of the Sn content in the alloys and with a temperature drop, the difference between the diffusion coefficients increased for both structure states.

[Abstracter's note: Complete translation.]

JK

Card 2/2

FEDOROV, G.B.; BABIKOVA, Yu.F.; GRUZIN, P.L.; ZHOMOV, F.I.; RYABOVA, G.G.

Radioactive-tracer techniques in the study of the mobility, interatomic interaction, and distribution of elements in zirconium and its alloys. Izv.vys.ucheb.zav.;khim. i khim.tekh. 3 no.3: 395-401 '60. (MIRA 14:9)

1. Moskovskiy inzhenerno-fizicheskiy institut, kafedra metallurgii i metallovedeniya.
(Zirconium alloys) (Radioactive tracers)

18.7000,21.1200

77220

SOV/89-8-1-14/29

AUTHORS: Gruzin, P. L., Ryabova, G. G., Fedorov, G. B.

TITLE: Iron Distribution in Microvolumes of Zirconium Alloys.
Letter to the Editor

PERIODICAL: Atomnaya energiya, 1960, Vol 8, Nr 1, pp 58-59 (USSR)

ABSTRACT: The use of zirconium in nuclear power reactors is very much reduced because of its poor strength and stability against corrosion. Although it is a well established fact that small impurities of different elements can decrease or increase its stability, little is known about the mechanism of these influences. Investigation of element distributions in alloys could, therefore, be very helpful, and the authors undertook to study the distribution of iron, which causes an extreme reduction of stability against corrosion especially in icdine containing zirconium. They used zirconium alloy with 0.15 weight

Card 1/5

Iron Distribution in Microvolumes of
Zirconium Alloys. Letter to the Editor

77220
SOV/89-8-1-14/29

% of iron and zircalloy type alloys (on the iodine zirconium basis) containing (in weight %): 1.1 lead, 0.1 iron, 0.1 chromium, and 0.05 nickel, and investigated the distribution of iron by means of contact autoradiography. Powdered radioactive isotope Fe^{59} was introduced into the alloy melted by means of an arc in the atmosphere of argon. Selfradiograms were taken on the MR type NIKFI plates by means of the 1.295 mev γ -ray and the 0.46 mev γ -ray of Fe^{59} . To insure sufficient resolution, sample thickness was of the order of a few tenths of a micron, which supplied a 5 to 10,000 imp/min $\cdot$ cm² intensity of radiation. Exposure time depended on the particular setup. The authors found that the iron distribution in the cast zirconium alloy was nonhomogeneous even after various thermomechanical treatments. Largest part of the iron remains concentrated on the boundaries between blocks obtained during the $\beta \rightarrow \alpha$ phase transition, and another part remains in the solid solution having not enough

Card 2/5

Iron Distribution in Microvolumes of
Zirconium Alloys. Letter to the Editor

77220

SOV/89-8-1-14/29

time to separate out of the alloy during its fast cooling. Similar iron distribution was recorded in cast zircalloy-2. A cold 5-10% deformation preserves almost the same picture as in cast alloys. Annealing of cold deformed alloys achieves a transfer of iron from solid solution to the α -phase boundaries. Forging hot alloys in air at temperatures between 850 and 750° C results in a strong granulation of their structure but the iron inhomogeneity remains. Thermal treatments of cast and hot-forged alloys occurred inside quartz tubing evacuated to approximately 10^{-4} mm Hg. Tempering the alloys from various temperatures from β -regions, the iron distributions stayed similar to those in cast alloys. This follows from the fact, pointed out by Hayes and others, that at high temperatures (in the β region) iron is in solid solution and fast cooling leads only to its partial separation on the boundaries developed during the $\beta \rightarrow \alpha$ transition. Slow cooling in ovens from the

Card 3/5

Iron Distribution in Microvolumes of
Zirconium Alloys. Letter to the Editor

77220
SOV/89-8-1-14/29

β -region temperatures leads to a more complete separation of iron along the boundaries and sub-boundaries of the α -phase. A sample of cast, unforged zirconium-iron alloy tempered at its eutectoid temperature of 800° C showed almost complete separation of iron from the solution in the form of the intermetallide $ZrFe_2$ distributed along the boundaries and inside the grains of the α -phase of zirconium. Annealing zirconium-iron alloy in the α -region at 600° C (20 h) and 500° C (40 h) after tempering at 1200 and 900° C preserved the inhomogeneity of the iron distribution. In zircalloy-2 the redistribution of iron proceeds at a slower rate than in pure zirconium. This is probably due to the presence of other elements with a distribution pattern similar to that of iron according to preliminary data. One can assume that the higher resistance to corrosion of the zircalloy group compared with zirconium-lead alloys is due to the fact that lead distributes uniformly in zirconium, increasing

Card 4/5

Iron Distribution in Microvolumes of
Zirconium Alloys. Letter to the Editor

77220

SOV/89-8-1-14/29

thereby the resistivity of the solid solution (representing the basis of the alloy), while Fe, Cr, and Ni concentrate on the boundaries of grains and blocks, slowing down the corrosion at the boundaries. There are 8 figures; and 7 references, 5 Soviet, 2 U.S. The U.S. references are: B. Lustman, F. Kerze, The Metallurgy of Zirconium, London, McGraw-Hill Book Co., 1955, p 608; E. Hayes, A. Roberson, W. O'Brien, Trans. Amer. Soc. Metals, 43, 888 (1951).

SUBMITTED: August 5, 1959

Card 5/5

8/755/61/000/003/003/027

AUTHORS: Babikova, Yu. F., Ryabova, G. G., Gruzin, P. L.

TITLE: Distribution of carbon additions in zirconium and titanium.

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Metallurgiya i metallovedeniye chistyykh metallov. no.3. 1961, 28-33.

TEXT: The paper deals with the problem of the nonuniformities of the C distribution in microvolumes of alloys. The investigation of the local character of the distribution of additive elements in Zr, Ti, and their alloys is of especial interest because these metals exhibit inferior high-temperature properties despite their elevated m.p. C especially impairs the corrosion resistance of Zr at high temperatures. The present investigation utilized the method of contact radioautography with concurrent metallography. Radioactive C^{14} was introduced into the metal by drilling a blind hole into an ingot, depositing a suitable amount of radioactive $BaCO_3$, plugging the hole with a stopper of the parent metal, and remelting the ingot in an arc furnace in an atmosphere of Ar. The resulting ingot was then subjected to various forms of high-temperature treatment. The amount of radioactive C thus introduced into iodide Zr did not exceed 0.005 wt.%. Similar tests were made on technical Ti with a C (including radioactive-C) content not exceeding 0.2%. It is apparent from the radioautographs and microstructural photos adduced that the C distribution in the two alloys is extremely nonuniform. Hot forging reduces the grain size, but does not change

Card 1/2

Distribution of carbon additions in zirconium and ... S/755/61/000/003/003/027

the C distribution. Quick cooling after anneal at T above the $\alpha \rightarrow \beta$ phase-transformation T leads to formation of a martensitic structure in both metals in which the C is distributed along the boundaries of the β -phase grains and along the internal interfaces formed as a result of the $\beta \rightarrow \alpha$ transformations. Slow cooling after anneal in the β -region of Zr preserves the nonuniformity of the C distribution in the solid solution, with C remaining along the boundaries and subboundaries of the Zr. Not so in Ti (with the greater C content): According to the phase diagram, a slow cooling from the β -phase region of Ti leads to the separation of a C-rich δ -phase in which almost all of the C of the alloy is concentrated. Thus a two-phase structure (which can be frozen by quick anneal from the $(\beta + \delta)$ region) comes into being in Ti. Heat treatment in the α -region (e.g., 20 hrs at 800°C) renders the C distribution in both Zr and Ti uniform, since at that anneal T the C enters the solid solution in either metal. In the absence of an accurate Zr-C phase diagram somewhat hypothetical remarks are made on a peritectoid reaction, based on the greater solubility of C in the Zr α -phase, which has a closely packed hexagonal lattice, than in the body-centered cubic β -phase. The more uniform distribution of C in Ti, after 20 hrs at 800°C, is attributed to the greater mobility of the C atoms. There are 4 figures and 3 references (all Russian-language: 1 Soviet, 1 translation from US-AEC data, and 1 translation from an English-language book by "Shvoppe," entitled "The Structure and Properties of Metals").

ASSOCIATION: MIFI (Moscow Engineering Physics Institute).

Card 2/2

S/755/61/000/003/010/027

AUTHORS: Ryabova, G.G., Gruzin, P.L.

TITLE: Study of the distribution of various elements in zirconium and its alloys by means of radioautography.

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Metallurgiya i metallove-deniye chistykh metallov. no.3. 1961, 96-119.

TEXT: The paper describes a series of tests in which contact radioautography (RA) was employed to investigate the distribution (D) of Sn, W, Fe, Ni, Cr, Nb, and C in Zr and some of its alloys. It was found that the character of the D of Fe, Ni, Cr, Nb, and C is substantially affected by the existence of a polymorphic transformation (PT) in Zr, which leads to the formation of subgranular concentrational non-uniformities in the D of these elements, but not in that of Sn and W. It is shown that certain other factors, such as deformation and heat treatment, affect the D of the various admixtures. A brief state-of-the-art survey on the effect of various impurities on the properties of Zr and its alloys is based primarily on 3 references: (1) "The metallurgy of Zr," (B. Lustman, F. Kerze, Jr., eds. McGraw-Hill, 1955; For. Lit. Publ. House, Moscow, 1959); (2) "Materials of the U.S. AEC," v.III - Nuclear Reactors, For. Lit. Publ. House, Moscow, 1956); (3) Ambartsumyan, R.S.,

Card 1/4

Study of the distribution of various elements ...

S/755/61/000/003/010/027

et al. (In Trans. 2d Intern'l Conf. on the Peaceful Uses of Atomic Energy, Geneva, 1958, v.3, Atomizdat, 1959). The test alloys were smelted in the MIFI-9-3 arc furnace in an atmosphere of purified Ar. Radioactive isotopes were introduced into the melt. The D of the various elements was studied after casting and following various work and heat treatments performed with all necessary precautions against the admittance of gases and other impurities to the alloys. RA was performed either with ordinary specimens or with thin (10-100 μ) specimens, depending on the radiation intensity of the isotope, which ranged from 2,000-30,000 pulses/cm²-min. NIKFI MK and MR film was used. Exposures ranged from 2 to 20 days. Sn: Some of the test results with Zr alloys and Zircalloy-type alloys containing 0.3-2.0 wt.% Sn were previously published by the senior authoress et al., in no.2 of the present sbornik, 1960, 128, and by G. B. Fedorov, et al. in Izv. vyssh. uchebn. zav. SSSR, "Khimiya i khim. tekhnologiya," no.3, 1960, 295. The dendritic liquation of Sn in cast specimens, increasing with Sn concentration and more pronounced in the Zircalloy-type alloy, is noted. Heating and holding at β -phase T's eliminated this nonuniform D and yielded a homogeneous solid solution. Hot forging at 800-850°C intensified the dendritic liquation of Sn. A 19-hr 620°C anneal of cold-worked alloys did likewise, despite recrystallization. v.: The W concentrated in the interdendritic regions. Hot forging as well as cold-working with subsequent 12-hr 700°C anneal preserved the intracrystalline liquation of the W despite complete

Card 2/4

Study of the distribution of various elements ...

S/755/61/000/003/010/027

recrystallization. Hot-forged specimens annealed at $1,200^{\circ}\text{C}$ retained the W liquidation after 1 hr, but after 6 hr uniform D of W in the Zr was achieved and retained regardless of the subsequent rate of cooling. Neither Sn nor W appear to exhibit preferential concentration of the respective element along the grain boundaries of the internal interfaces formed by Zr transformation. Fe: Part of the test results was published by the authors et al. in Atomnaya energiya, v.8, no.1, 1960, 58. Fe was concentrated primarily along the subboundaries formed in the α -phase transformation. Part of the Fe was retained within the phase space, more so in Zircalloy-type alloys than in binary alloys. The structures resulting from hot and cold forging, followed by various quench, anneal, and slow-cooling procedures are detailed. Ni: The D of Ni was nonuniform in all cast alloys; part of the Ni was retained within the lamellae of transformed α -phase, the remainder concentrated along the interface formed during transformation. The results of various hot- and cold-working procedures and subsequent heat treatments are described. Cr: In cast specimens quenched at $1,000^{\circ}\text{C}$ the Cr was distributed uniformly, but upon slow cooling from 900 - $1,000^{\circ}\text{C}$ the Cr concentrated along the subboundaries of the α -solid solution. Hot forging and 3-hr anneal at 900° yielded a uniform D of Cr, $1,000^{\circ}$ quench and 370-hr anneal at 400° did likewise. Nb: Nb was uniformly distributed in alloy quenched at $1,000^{\circ}$, also after forging at 750 - 800° and after 3-hr anneal at 800° . Slow cooling from 900 - $1,000^{\circ}$ led to Nb recrystallization. Nb

Card 3/4

Study of the distribution of various elements ...

S/755/61/000/003/110/027

concentrates along the α -phase subboundaries formed upon β -transformation; a similar D was observed after anneal in the β region both in the cast and in the hot-worked alloy. C: Part of the results was published by P. L. Gruzin et al. in v.6 of the Trans. 2d Internat'l Conf. on the Peaceful Uses of Atomic Energy, Geneva, 1958, Atomizdat, 1959, 189. Additional detail is provided, especially on the selective carbide enrichment of some grains as against others. A comparison of the D of C in the α and β phases shows that the solubility of C in the α -phase at 800°C is no less than 0.1%, whereas it is significantly less in the β -phase, particularly at T near the $\alpha \rightleftharpoons \beta$ -transformation T of Zr. Interpretation of results: The individual test results are interpreted in the light of the effect of polymorphic transformations on (1) dendritic liquation; (2) inclusions; (3) boundary concentration, to which a new phenomenon, namely, subboundary concentration, is added in the Zr and, no doubt, in other metals. The phenomena involved in these transformations, and their possible effect on the concentration of impurities along the newly formed discontinuity surfaces, are discussed with reference to 4 U.S. papers and V. I. Arkharov's hypothesis on the intercrystalline internal adsorption. There are 23 figures and 12 references (5 Russian-language Soviet, 2 English-language U.S., and 5 Russian-language translations of U.S. papers and textbooks).

ASSOCIATION: MIFI (Moscow Engineering Physics Institute).

Card 4/4

S/755/61/000/003/011/027

AUTHORS: Ryabova, G.G. Gruzin, P.L.

TITLE: Investigation of the diffusional mobility of zirconium in alloys of the zirconium-niobium system.

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Metallurgiya i metallurgiya deniye chistykh metallov. no.3. 1961, 120-126.

TEXT: The paper describes experimental work intended primarily to utilize the good heat-resistance and refractoriness characteristics of Nb to improve the inferior heat resistance of Zr. More especially, the tests explored the diffusional characteristics in alloys based on these metals to ascertain the diffusional mobility of atoms in passing from the high diffusional-mobility (DM) Zr to the Nb which, judging from its high heat resistance, is endowed with a small atomic DM. The alloys tested contained Zr with (in wt.%) 1, 2, 3, 7, 20, 35, 70, 90, and 100% Nb; the initial Zr impurities are listed. The ingots containing up to 20% Nb were hot-forged in air at 700-900°C, freed of scale by grinding, and cut into 8x8x5-mm specimens. Specimens with >20% Nb (hi-Nb) were prepared from cast alloys. The specimens were subjected to 10-hr homogenizing anneal at 1,200° and, for hi-Nb specimens, to 20 hrs anneal at 1,400° in a quartz tube under a $1 \cdot 10^{-4}$ -torr vacuum. After anneal

Card 1/3

Investigation of the diffusional mobility of ...

S/755/61/000/003/011/027

a layer about 0.1μ thick of radioactive Zr^{95} was sprayed onto one face of each specimen, and the uniformity of the layer was checked by a radioautograph check. Pairs of specimens, with their Zr^{95} faces in mutual contact, were tied together with Mo wire, wrapped in Mo foil, and were then diffusion-annealed; the Mo-foil wrapping included also some Zr shavings which served as a getter. The various diffusion-anneal T and exposure times are tabulated. The diffusion coefficients are determined by the layerwise integral radioactivity method of P. L. Gruzin (Akad. n. SSSR, Izv., Otd. tekhn. n., no.3, 1953). The experimentally determined diffusion coefficients (DC) of Zr and the diffusional activation energies and the numerical values of the pre-exponential factor obtained from the T variation of the DC's are tabulated. From a plot of the variation of the DC with concentration it is evident that the DM of the Zr atoms changes with the Nb concentration, decreasing gradually with increasing Nb content up to 50% and then dropping sharply. On the Zr-Nb phase diagram, the solidus curve attains a minimum for about 20-30% Nb; at the Zr end, the decrease in m.p. is not accompanied by an increase in DM of the Zr atoms, whereas at the Nb end the DM of the Zr atoms increases with the decreasing m.p. In testing the Nb diffusion, the oxalate of Nb^{95} was utilized as a tracer, since metallic radioactive Nb^{95} is not available. The tracer layer applied to the specimens contained Nb oxide containing Nb^{95} ; hence, Nb diffusion was accompanied and may have been affected by the diffusion of the O. The DC of Nb in Zr is of a magnitude comparable

Card 2/3

Investigation of the diffusional mobility of ...

S/755/61/000/003/011/027

to that of Zr self-diffusion. It is found that the pre-exponential factor D_0 for Zr diffusion in Nb is of the order of $0.1 \text{ cm}^2/\text{sec}$, which is typical value for many metals. For the diffusion of Nb in Zr, the corresponding value is $2.2 \cdot 10^{-4} \text{ cm}^2/\text{sec}$, that of Zr self-diffusion $10^{-4} \text{ cm}^2/\text{sec}$. In summary the tests show that the DC of Zr in Zr-Nb alloys, the diffusional activation energy Q and the pre-exponential factor D_0 are all dependent on the alloy concentrations. With increasing Nb content in Zr alloys both Q and D_0 increase, whereas the DM of the Zr atoms decreases; all of these changes are smooth within the region of the existence of continuous solid solutions in the Zr-Nb system. Nb enrichment of Zr impairs the course of diffusion processes in the Zr and enhances the coupling forces between the atoms in the crystalline lattice. This, in summary, appears to be the cause for the improved refractoriness of Nb-containing Zr alloys. These are 3 figures, 5 tables, and 8 references (7 Russian-language Soviet and 1 Russian-language translation of "The Metallurgy of zirconium," B. Lustman, F. Kerze, Jr., eds., McGraw-Hill, 1955; For. Lit. Publ. House, 1959).

ASSOCIATION: MIFI (Moscow Engineering Physics Institute).

Card 3/3